Water Quality Clean Up Plan

The Gulf, Barlow, Mattawoman, Jacobus, and Hungars Creeks

Dana Gonzalez
Virginia Department of Environmental Quality
January 20, 2015

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Acknowledgements

- Steering Committee Members
- Working Group Members
- Virginia Department of Environmental Quality (DEQ)
- Virginia Institute of Marine Science
- Northampton County
- Northampton County Department of Planning
- Eastern Shore Soil and Water Conservation District
- Natural Resources Conservation Service
- Virginia Department of Health
- Accomack-Northampton Planning District Commission
- Eastern Shore RC&D
- Citizens and stakeholders in the Gulf, Barlow, Mattawoman, Jacobus, and Hungars Creeks

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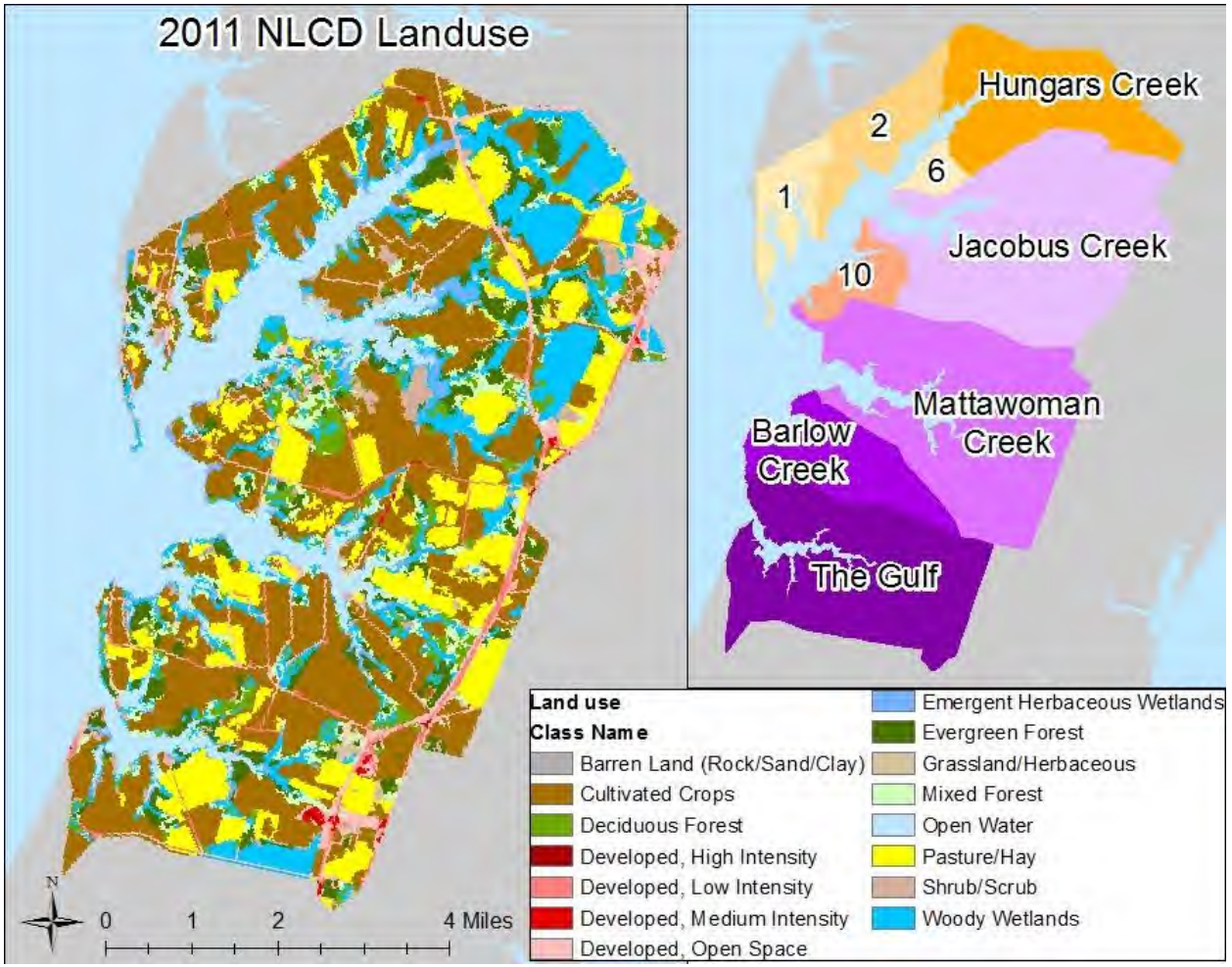
Watershed Landuse

- Over 15,000 acres
- 54% Crop/Pasture
- 21% Forest
- 17% Wetland



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Why do we need a plan for clean water?

- Fecal coliform bacteria too high
- Indicator of pathogens in the water (viruses, protozoans, bacteria)
- Shellfish bed closures

Photo: http://reefbuilders.com/2013/05/03/friday-smorgasbord-34/

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What is included in the plan?

- Review of potential sources of bacteria and reductions needed
- Best Management Practices (BMPs) that will improve water quality
- Education/Outreach plans
- Costs and benefits
- Funding opportunities
- Timeline (goals and milestones for implementation)

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Where are we now?

Meeting Date	Meeting Type
27 February 2014	Kick-off Meeting Combined Working Group
24 June 2014	Government Working Group Agricultural/Residential Working Group
25 September 2014	Combined Working Group
4 December 2014	Combined Working Group
8 January 2014	Steering Committee
20 January 2014	Final Public Meeting
30-Day Public Comment Period Starts Tomorrow Plan Available at: http://www.deq.virginia.gov/Programs/Water/WaterQualityInformationTMDLs/TMDL/TMDLImplementation/TMDLImplementationPlans.aspx	

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Potential Bacteria Sources

- Human (septic, straight pipe, pit privies)
- Livestock (cattle, chicken, horse, sheep, goat)
- Pet (dog, cat)
- Wildlife (deer, raccoon, muskrat, duck, geese)

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Bacteria Reductions Needed

Watershed	Reduction Needed
The Gulf	86%
Barlow Creek	94%
Mattawoman Creek	81%
Jacobus Creek	75%
Hungars Creek TMDL Region	82%
Hungars Creek non-TMDL Subwatershed 1	90%
Hungars Creek non-TMDL Subwatershed 2	81%
Hungars Creek non-TMDL Subwatershed 6	81%
Hungars Creek non-TMDL Subwatershed 10	86%

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Phased Implementation

- Phase 1 (years 1-5)
  - Human, pet, livestock sources addressed
  - Education
- Phase 2 (years 6-10)
  - Additional education and septic pump-outs
  - Wildlife management (VDGIF recommendations for geese and deer outlined in plan)

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Agricultural Best Management Practices

			Agricultural BMPs_Estimated Units Needed									
Control Measure	**Unit**	**Unit Cost ($)**	**The Gulf**	**Barlow Creek**	**Mattawoman Creek**	**Jacobus Creek**	**Hungars Creek**	**Hungars Subwatershed 1**	**Hungars Subwatershed 2**	**Hungars Subwatershed 6**	**Hungars Subwatershed 10**	**Total**
Woodland Buffer Filter Area (FR-3)	Acres	700	21	10	25	21	9	3	9	2	2	102
Livestock Exclusion with Riparian Buffers (LE-1T, SL-6T)	System	15,000	1	1	1	1	1	0	0	0	0	5
Livestock Exclusion with Reduced Setback (LE-2T)	System	10,000	1	1	1	1	1	0	0	0	0	5
Small Acreage Grazing System (SL-6AT)	System	1,500	2	0	0	1	2	0	0	0	1	6
Small Grain Cover Crop (SL-8B) (VACS Funding)	Acres	100	112	58	140	140	50	20	52	12	10	594
Pasture Management (Livestock/horse) (SL-10T)	Acres	75	100	100	100	100	100	0	0	0	0	500
Pasture Management (Sheep/Goats) (SL-10T)	Acres	75	0	0	10	0	20	0	8	0	0	38
Sediment Retention, Erosion, or Water Control Structures (WP-1)	Acres	4,300	11	6	14	11	5	2	5	1	1	56

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Photo: http://www.fauquiercounty.gov/documents/departments/jmswcd/pdf/bmp/fr-3.pdf

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Livestock Exclusion with Riparian Buffers (LE-1T, SL-6T)	System	15,000	1	1	1	1	1	0	0	0	0	5
Livestock Exclusion with Reduced Setback (LE-2T)	System	10,000	1	1	1	1	1	0	0	0	0	5
Small Acreage Grazing System (SL-6AT)	System	1,500	2	0	0	1	2	0	0	0	1	6

Photo:http://www.dcr.virginia.gov/soil_and_water/documents/streamsideexcl.pdf

Photo:https://pubs.ext.vt.edu/442/442-766/442-766_pdf.pdf

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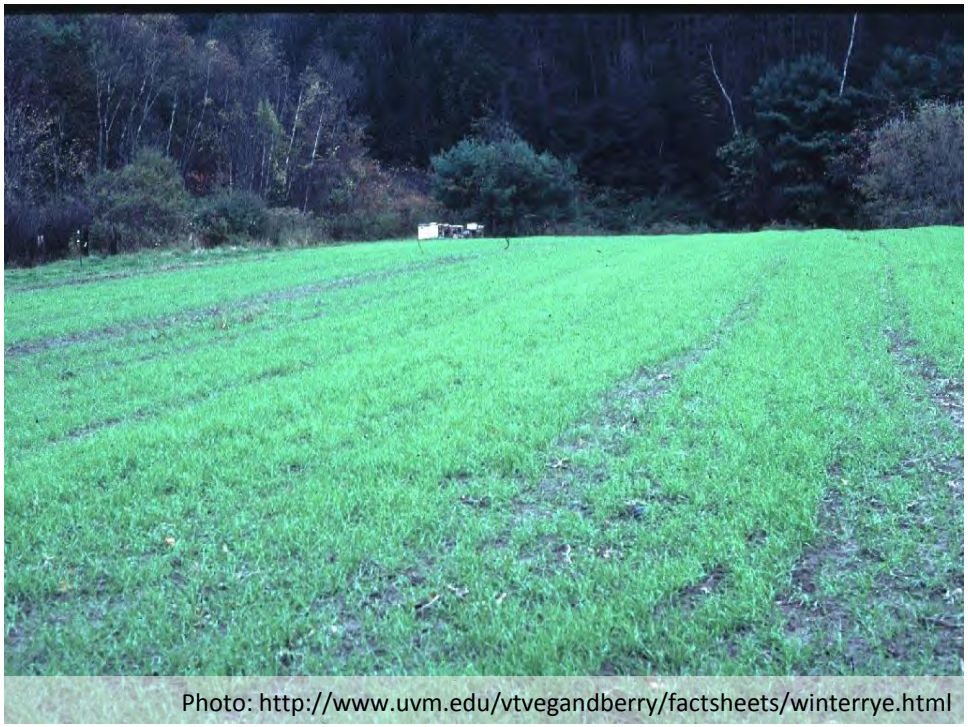

Photo: http://www.uvm.edu/vtvegandberry/factsheets/winterrye.html

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Pasture Management (Livestock/horse) (SL-10T)	Acres	75	100	100	100	100	100	0	0	0	0	500
Pasture Management (Sheep/Goats) (SL-10T)	Acres	75	0	0	10	0	20	0	8	0	0	38

Photo: http://www.fairfaxcounty.gov/nvswcd/newsletter/horsepasture.htm

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Sediment Retention, Erosion, or Water Control Structures (WP-1)	Acres	4,300	11	6	14	11	5	2	5	1	1	56

Photo:http://www.fairfaxcounty.gov/nvswcd/newsletter/esc.htm

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Residential Best Management Practices

			Residential BMPs_Estimated Units Needed									
Control Measure	Unit	Unit Cost ($)	The Gulf	Barlow Creek	Mattawoman Creek	Jacobus Creek	Hungars Creek	Hungars Subwatershed 1	Hungars Subwatershed 2	Hungars Subwatershed 6	Hungars Subwatershed 10	Total
Phase 1 (Years 1-5) Septic Tank Pumpout (RB-1)	System	300	237	60	178	225	49	134	22	4	48	957
Phase 2 (Years 6-10) Septic Tank Pumpout (RB-1)	System	300	258	65	194	243	62	146	24	5	52	1049
Septic System Repair (RB-3)	System	3,000	5	1	3	3	3	2	1	1	1	20
Septic System Replacement/Installation (RB-4)	System	6,000	8	3	7	8	5	5	1	0	3	40
Septic System Replacement/Installation with Pump (RB-4P)	System	6,500	4	1	3	4	3	2	0	0	1	18
Alternative On-Site System (RB-5)	System	25000	4	0	3	3	2	2	0	0	0	14
Pet Waste Composter	System	50	80	20	60	75	20	45	10	3	15	328
Pet Waste Station (facility/signage/supplies)		600	7	3	5	5	2	4	1	0	2	29
Vegetated Buffer on Residential Land	Acres	400	5	2	5	5	2	5	1	1	1	27
Rain Garden	Acres	5,000	8	3	8	9	4	8	2	1	2	45

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Residential Best Management Practices

Control Measure	Unit	Unit Cost	Residential BMPs_Estimated Units Needed									Total
			The G	Barlow C	Mattawo	Jacobus C	Hungars	Hung	Hung	Hung	Hung	
Phase 1 (Years 1-5) Septic Tank Pumpout (RB-1)	Systen											
Phase 2 (Years 6-10) Septic Tank Pumpout (RB-1)	Systen											
Septic System Repair (RB-3)	Systen											
Septic System Replacement/Installation (RB-4)	Systen											
Septic System Replacement/Installation with Pump (RB-4P)	Systen											
Alternative On-Site System (RB-5)	Systen	25000	4	0	3	3	2	2	0	0	0	14
Pet Waste Composter	System	50	80	20	60	75	20	45	10	3	15	328
Pet Waste Station (facility/signage/supplies)		600	7	3	5	5	2	4	1	0	2	29
Vegetated Buffer on Residential Land	Acres	400	5	2	5	5	2	5	1	1	1	27
Rain Garden	Acres	5,000	8	3	8	9	4	8	2	1	2	45

http://www.kingcounty.gov/healthservices/health/ehs/wastewater/owners/failure.aspx

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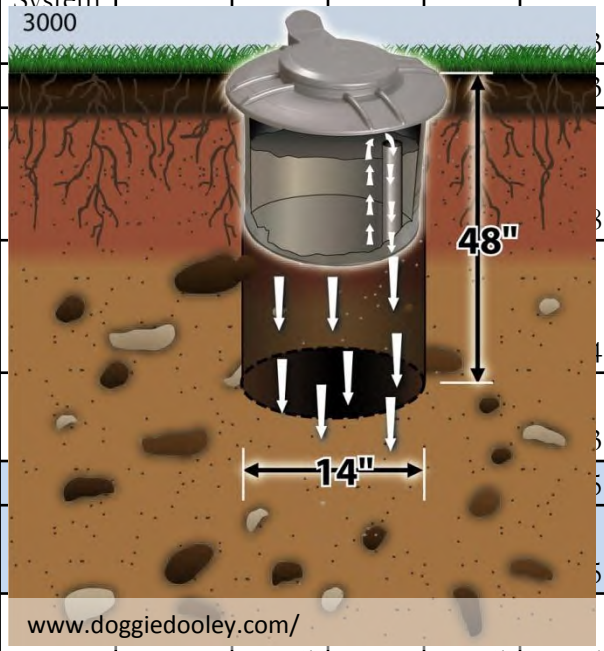
Residential Best Management Practices

Control Measure	Unit	Unit Cost ($)	Residential BMPs_Estimated Units Needed									Total
			The Gulf	Barlow Creek	Mattawoman Creek	Jacobus Creek	Hungars Creek	Subwate	Subwate	Subwate	Hungars	
Phase 1 (Years 1-5) Septic Tank Pumpout (RB-1)	System	300	237	60	178	225	49				48	957
Phase 2 (Years 6-10) Septic Tank Pumpout (RB-1)	System						62				52	1049
Septic System Repair (RB-3)							3				1	20
Septic System Replacement/Installation (RB-4)							5				3	40
Septic System Replacement/Installation with Pump (RB-4P)							3				1	18
Alternative On-Site System (RB-5)							2				0	14
Pet Waste Composter							20				15	328
Pet Waste Station (facility/signage/supplies)							2				2	29
Vegetated Buffer on Residential Land		400	5	2	5	5	2				1	27
Rain Garden	Acres	5,000	8	3	8	9	4	8	2	1	2	45



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Residential Best Management Practices

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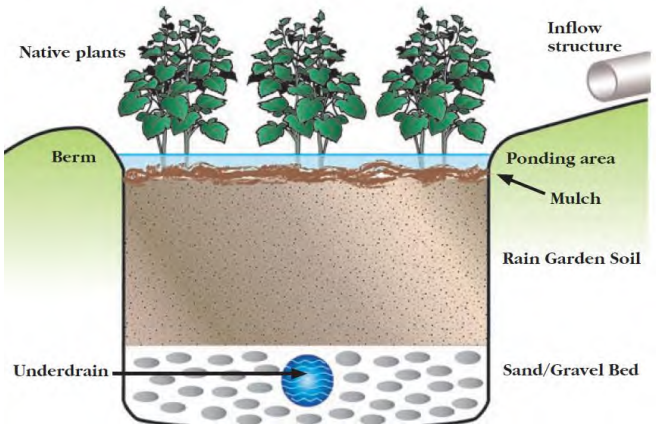
Vegetated Buffer on Residential Land	Acres	400	5	2	5	5	2	5	1	1	1	27
Rain Garden	Acres	5,000	8	3	8	9	4	8	2	1	2	45



http://www.fairfaxcounty.gov/nvswcd/raingardenbk.pdf

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Education

		Education programs	
Phase 1 (Years 1-5)	**Phase 2 (Years 6-10)**	**Total cost per program ($)**	**Practice**
1	1	3,000	Recreational Boater Education Program
1	1	2,500	Residential Education Program (pet, septic)
1	1	2,500	Aquaculture (Oyster Gardening) Education Program
	1	10,000	Wildlife Education/Management Program

- Recreational boaters: sanitary pump out locations & impact that discharging waste overboard has on water quality
- Oyster gardening: additional filtration and connection to local water quality
- Residential: septic maintenance, pet waste, managing nuisance wildlife

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Costs and Benefits

- Costs
  - Total: $1,895,650
    - Phase 1: $1,877,650
    - Phase 2: $332,700
- Benefits
  - Improved water quality
  - Aquaculture
  - Property values and septic system care

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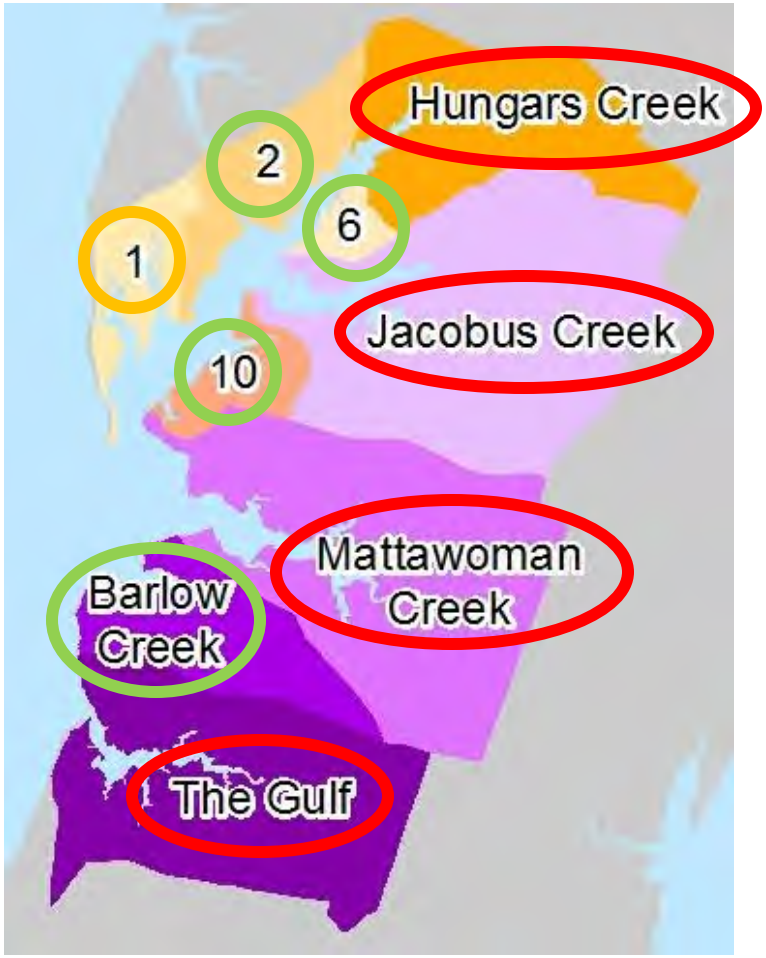
Implementation Prioritization

- Highest Priority: EPA approved TMDLs and shellfish bed closures
- Medium Priority: Not included in EPA approved TMDLs, but has current shellfish bed closures
- Lower Priority: Not included in EPA approved TMDLs and/or no current shellfish impairments



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Funding

- Virginia Agricultural Best Management Practices Cost-Share and Tax Credit Program
- Virginia Water Quality Improvement Fund
- EPA 319 Funds through DEQ
- USDA Programs (CREP/EQIP)
- DOF Trees for Clean Water
- National Fish and Wildlife Foundation Grants
- Southeast Rural Community Assistance Project

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Next steps

- Voluntary Implementation
- Agricultural BMP implementation through SWCD and NRCS
- Pursue grant opportunities

Public Comment Period

- January 20, 2015 – February 20, 2015
- Send written comments to:

Dana Gonzalez

Virginia Department of Environmental Quality

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